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## Regulating the Digital Frontier: Legal Complexities in the Age of Tech Disruption

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*The emergence of new technologies has reshaped the world's business landscapes, bringing challenges as well as opportunities for regulatory and legal systems. The ubiquity of Big Tech, data privacy issues, changes in labour regulations, and the emergence of decentralised finance (DeFi) have urged major legislative inquiries. Governments globally are fighting to regulate online transactions, blockchain assets, and international trade while maintaining equitable competition, corporate accountability, and consumer protection. The essay discusses the resulting legal issues surrounding these technological leaps, evaluating how they affect antitrust legislation, insolvency regulations, environmental protections, and markets. It delves into possibilities for legal overhaul to establish an equilibrium, pro-innovation legal framework. Ultimately, this article argues that traditional, static statutes are insufficient for governing borderless digital ecosystems. By analysing recent case studies and multi-jurisdictional approaches, it highlights the urgent need for agile regulatory models. Such models must effectively mitigate systemic risks and bridge jurisdictional gaps while cultivating sustainable economic growth in an increasingly interconnected global economy.*

**Keywords:** *emerging technologies, business law, data privacy, blockchain, ESG compliance.*

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## INTRODUCTION

Advances in technology have radically changed the nature of international markets, forcing legal frameworks to respond to a growing digital economy. Companies transact activities in several jurisdictions using Artificial Intelligence (AI), big data, blockchain, and platform business models to enhance growth. The shift has, however, resulted in regulatory issues such as antitrust policies, data protection legislation, labour rights complaints, tax reforms, and financial market stability.

Governments across the globe are confronted with the challenge of having legal control over online businesses and promoting economic innovation. The European Union's Digital Markets Act, the United States' antitrust cases against Big Tech, and India's Personal Data Protection regulations demonstrate regulatory changes to ensure fair competition and the security of data. Likewise, the swift adoption of blockchain-based financial systems, decentralised finance (DeFi), and tokenised investments has created legal uncertainties on rights to property, taxation, and insolvency proceedings. This paper discusses these emerging legal issues, providing a detailed examination of areas of regulatory gaps and solutions.

## LITERATURE REVIEW

The jurisdiction governing new technologies is an ever-changing arena, with academics and practitioners constantly struggling to interpret the effects of accelerated digital change. The spread of Big Tech has resulted in fierce criticism regarding monopolistic practices and the effectiveness of current antitrust regimes. Wu and Khan have critically examined the increasing concentration of power among technology conglomerates, arguing for aggressive antitrust enforcement to prevent market distortions and anti-competitive practices.<sup>1</sup> Similarly, the European Union's Digital Markets Act (DMA) and the United States' legislative actions reflect a growing consensus on the need for stricter oversight.<sup>2</sup>

The digital economy's dependence on cross-border data flows has also generated intense debates around privacy rights, cybersecurity threats, and corporate responsibilities. Solove

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<sup>1</sup> Leslie Jusuf, 'The Case for Breaking Up Big Tech' (*Berkeley Political Review*, 18 October 2024) <<https://bpr.studentorg.berkeley.edu/2024/10/18/the-case-for-breaking-up-big-tech/>> accessed 10 May 2026

<sup>2</sup> Digital Markets Act 2022

criticises the patchwork of global data protection laws, highlighting that although regulations such as the General Data Protection Regulation (GDPR) have established a precedent, they are still uneven in enforcement across jurisdictions.<sup>3</sup> India's Digital Personal Data Protection Act (DPDPA) 2023 represents an attempt to strike a balance between data sovereignty and innovation, yet it raises concerns over compliance burdens for multinational corporations.<sup>4</sup>

Another urgent concern is the changing legal status of gig workers. Growing dependence on platform labour has raised uncertainty about employment classification and social security benefits. The UK Supreme Court's decision in *Uber BV v Aslam* reiterated the idea that gig workers are due employment benefits, undermining the conventional independent contractor model.<sup>5</sup> In contrast, California's AB5 law introduced a stricter test for worker classification, sparking debates on whether regulatory intervention stifles flexibility in platform-driven work arrangements.<sup>6</sup>

Corporate sustainability and ESG responsibilities have also drawn legal attention. Richardson examines the perils of greenwashing and the need for increased regulatory supervision in corporate sustainability reporting.<sup>7</sup> The European Union's Corporate Sustainability Due Diligence Directive (CSDDD) mandates transparency in ESG disclosures, while India's Securities and Exchange Board (SEBI) enforces Business Responsibility and Sustainability Reporting (BRSR) requirements.<sup>8</sup> Despite these measures, challenges persist in ensuring corporate accountability and preventing deceptive sustainability claims.

The integration of blockchain in financial transactions has introduced novel regulatory concerns, particularly in insolvency proceedings and debt restructuring. Scholars such as Zetsche et al. highlight the potential of smart contracts to automate debt repayments but warn of legal uncertainties regarding enforceability.<sup>9</sup> The valuation of digital assets in

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<sup>3</sup> Daniel J Solove, 'The Myth of the Privacy Paradox' (2021) 89 *George Washington Law Review* <[https://scholarship.law.gwu.edu/faculty\\_publications/1482/](https://scholarship.law.gwu.edu/faculty_publications/1482/)> accessed 10 May 2026

<sup>4</sup> Digital Personal Data Protection Act 2023

<sup>5</sup> *Uber BV & Ors v Aslam & Ors* [2021] UKSC 5

<sup>6</sup> California Assembly Bill 2019

<sup>7</sup> Benjamin J Richardson, *Socially Responsible Investment Law: Regulating the Unseen Polluters* (OUP 2008)

<sup>8</sup> 'Business Responsibility and Sustainability Reporting Guidelines' (Securities and Exchange Board of India, 10 May 2021) <[https://www.sebi.gov.in/legal/circulars/may-2021/business-responsibility-and-sustainability-reporting-by-listed-entities\\_50096.html](https://www.sebi.gov.in/legal/circulars/may-2021/business-responsibility-and-sustainability-reporting-by-listed-entities_50096.html)> accessed 10 May 2026

<sup>9</sup> Dirk A Zetsche et al., 'The Distributed Liability of Distributed Ledgers: Legal Risks of Blockchain' (2017) University of Luxembourg Law Working Paper No. 007/2017

bankruptcy proceedings remains contentious, as evidenced by legal disputes in cases like *Re Mt Gox Co Ltd*.<sup>10</sup> Furthermore, decentralised finance (DeFi) ecosystems operate largely outside traditional regulatory oversight, prompting calls for harmonised legal frameworks to address fraud, financial instability, and taxation complexities.<sup>11</sup>

These academic works highlight the imperative of updating legal structures in order to confront the changing challenges of digital economies, financial innovations, and labour relations. With technology's ever-increasing tendency to disrupt traditional legal frameworks, regulatory adjustment continues to be a primary imperative for maintaining economic stability, consumer protection, and corporate accountability.

## METHODOLOGY

This study adopts a doctrinal legal methodology, examining statutes, case laws, and rulebooks governing emerging technologies under business law. The Digital Markets Act (EU), GDPR, Digital Personal Data Protection Act 2023, and California AB5 Law are the key legislations. Secondary sources are scholarly articles by Tim Wu, Lina Khan, Daniel Solove, and Benjamin Richardson and reports of regulatory authorities.

A comparative legal comparison of the EU, US, and India centres on regulatory directions, while case law comparison, e.g., *Uber BV v Aslam* and *US DOJ v Google*, looks at judicial reactions. The study is restricted to legal aspects only, without a detailed technical analysis of the emerging technologies. This systematic methodology guarantees a thorough comprehension of regulatory issues and possible legal reforms.

## ANALYSIS OF KEY LEGAL CHALLENGES AND OPPORTUNITIES

The speeded-up rate of technological innovation has impacted business law profoundly, creating serious legal issues in areas of antitrust enforcement, data privacy, labour rights, corporate responsibility, and financial regulation. These issues need to be solved by creative

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<[https://www.researchgate.net/publication/319579191\\_The\\_Distributed\\_Liability\\_of\\_Distributed\\_Ledgers\\_Legal\\_Risks\\_of\\_Blockchain](https://www.researchgate.net/publication/319579191_The_Distributed_Liability_of_Distributed_Ledgers_Legal_Risks_of_Blockchain)> accessed 10 May 2026

<sup>10</sup> *Re Mt Gox Co Ltd* [2014] Tokyo District Court Bankruptcy No 2014-1696

<sup>11</sup> Updated Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers' (Financial Action Task Force, 2021) <<https://www.fatf-gafi.org/content/dam/fatf-gafi/guidance/Updated-Guidance-VA-VASP.pdf.coredownload.inline.pdf>> accessed 10 May 2026

regulatory structures that are capable of striking a balance between innovation, market fairness, and consumer protection and ensuring legal certainty across borders.

**Antitrust and Market Dominance:** The monopolistic power of major technology firms, such as Google, Amazon, Apple, Meta, and Microsoft, has led to increased regulatory scrutiny. In the European Union, the Digital Markets Act (DMA) (2022) aims to curb anti-competitive practices, mandating greater interoperability and prohibiting self-preferencing by gatekeeper platforms.<sup>12</sup> The United States Department of Justice’s antitrust lawsuit against Google, alleging monopolisation of the digital advertising market, marks a major step in addressing Big Tech’s dominance.<sup>13</sup> Similarly, in India, the Competition Commission of India (CCI) fined Google ₹1,337.76 crore, citing abuse of dominance in its Android ecosystem.<sup>14</sup> Landmark judgments, such as *United States v Microsoft Corp*, have set precedents in defining anti-competitive behaviour in the tech sector.<sup>15</sup> However, critics argue that excessive regulation could hinder technological progress, raising concerns over regulatory overreach.<sup>16</sup>

**Data Privacy, Cybersecurity, and Legal Liabilities:** The legal landscape for data privacy is undergoing rapid transformation. The General Data Protection Regulation (2016) remains the gold standard, imposing stringent compliance obligations on businesses handling EU citizens’ data.<sup>17</sup> Landmark cases, such as *Google Spain SL v Agencia Española de Protección de Datos*, established the ‘Right to be Forgotten,’ reinforcing individual control over personal data.<sup>18</sup> Similarly, the Digital Personal Data Protection Act, 2023 (India), introduces significant penalties for data breaches and mandates explicit consent for data processing.<sup>19</sup> Despite such advancements, data localisation laws create jurisdictional conflicts, complicating international business operations.<sup>20</sup> In *Schrems II* (2020), the Court of Justice of the European Union (CJEU) invalidated the EU-US Privacy Shield, emphasising the inadequacy of US data

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<sup>12</sup> Digital Markets Act 2022

<sup>13</sup> *United States of America et al. v Google LLC* [2025] 1:20-cv-03010 (APM) DDC

<sup>14</sup> ‘CCI imposes a monetary penalty of Rs. 1337.76 crore on Google for anti-competitive practices in relation to Android mobile devices’ (*PIB*, 20 October 2022)

<<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1869748&reg=48&lang=2>> accessed 10 May 2026

<sup>15</sup> *United States v Microsoft Corp* [2001] 253 F 3d 34 (D.C. Cir. 2001)

<sup>16</sup> Lina M Khan, ‘Amazon’s Antitrust Paradox’ (2017) 126 *Yale Law Journal*

<[https://yalelawjournal.org/pdf/e.710.Khan.805\\_zuvfyeh.pdf](https://yalelawjournal.org/pdf/e.710.Khan.805_zuvfyeh.pdf)> accessed 10 May 2026

<sup>17</sup> General Data Protection Regulation 2016

<sup>18</sup> *Google Spain SL v Agencia Española de Protección de Datos* C-131/12

<sup>19</sup> Digital Personal Data Protection Act 2023

<sup>20</sup> *OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data* (OECD, 2002)

protection mechanisms.<sup>21</sup> These cases underscore the ongoing struggle to harmonise global data protection standards.

**Gig Economy and Labour Law Challenges:** The rise of digital labour platforms such as Uber, Swiggy, and Amazon Flex has sparked debates on worker classification. The UK Supreme Court ruling in *Uber BV v Aslam* recognised Uber drivers as employees entitled to basic employment rights, setting a precedent for gig worker protections.<sup>22</sup> Similarly, California's Assembly Bill 5 (AB5) (2019) established stricter classification standards, impacting the gig workforce across the US.<sup>23</sup> Courts in France and Spain have also ruled in favour of classifying platform workers as employees rather than independent contractors.<sup>24</sup> These judgments highlight the global push for greater labour protections, although tech companies argue that such regulations threaten business models based on flexible work structures.<sup>25</sup>

**Corporate Responsibility and ESG Compliance:** Regulations on Environmental, Social, and Governance (ESG) compliance are tightening to combat greenwashing and enforce corporate accountability. The European Union's Corporate Sustainability Reporting Directive (CSRD) (2022) expands ESG disclosure requirements, while India's Business Responsibility and Sustainability Reporting (BRSR) framework mandates transparent sustainability disclosures for listed entities.<sup>26</sup> Landmark litigation, such as *Milieudefensie v Royal Dutch Shell*, where Shell was ordered to cut carbon emissions by 45% by 2030, underscores the growing legal risks corporations face for environmental mismanagement.<sup>27</sup> Cases like *SEC v Volkswagen AG* highlight the financial consequences of corporate greenwashing in the wake of the

<sup>21</sup> 'Data Protection Commissioner v. Facebook Ireland Ltd.' (2021) 134(4) Harvard Law Review <<https://harvardlawreview.org/print/vol-134/data-protection-commissioner-v-facebook-ireland-ltd/>> accessed 10 May 2026

<sup>22</sup> *Uber BV & Ors v Aslam & Ors* [2021] UKSC 5

<sup>23</sup> California Assembly Bill 2019

<sup>24</sup> Christina Hießl, 'The Classification of Platform Workers in Case Law: A Cross-European Comparative Analysis' (2022) 42.2 Comparative Labor Law & Policy Journal <<http://dx.doi.org/10.2139/ssrn.3982738>> accessed 10 May 2026

<sup>25</sup> Adrian Todolí-Signes, 'Notes on the Spanish Supreme Court Ruling That Considers Riders to Be Employees' (2020) SSRN <[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3717599](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3717599)> accessed 10 May 2026

<sup>26</sup> Corporate Sustainability Reporting Directive 2022

<sup>27</sup> Chiara Macchi and Josephine van Zeben, 'Business and human rights implications of climate change litigation: *Milieudefensie et al. v Royal Dutch Shell*' (2021) 30(3) Review of European <[https://www.researchgate.net/publication/355181307\\_Business\\_and\\_human\\_rights\\_implications\\_of\\_climate\\_change\\_litigation\\_Milieudefensie\\_et\\_al\\_v\\_Royal\\_Dutch\\_Shell](https://www.researchgate.net/publication/355181307_Business_and_human_rights_implications_of_climate_change_litigation_Milieudefensie_et_al_v_Royal_Dutch_Shell)> accessed 10 May 2026

Dieselgate scandal.<sup>28</sup> While stricter ESG laws enhance corporate responsibility, companies often face compliance challenges due to varying global standards.

**Digital Assets and Insolvency Law:** The rise of cryptocurrencies, NFTs, and decentralised finance (DeFi) has introduced significant challenges in insolvency proceedings. Courts struggle with the valuation and distribution of digital assets, as seen in the Mt. Gox insolvency case (2014), where the collapse of the Bitcoin exchange left creditors facing legal uncertainties.<sup>29</sup> Similarly, the Celsius Network bankruptcy (2022) and FTX collapse (2022) raised issues concerning investor protection and fraudulent mismanagement in the crypto space.<sup>30</sup> The UK Jurisdiction Taskforce’s 2019 statement recognised crypto-assets as property, paving the way for legal recognition.<sup>31</sup> In India, the Reserve Bank of India’s 2018 banking ban on cryptocurrency, later overturned in *Internet and Mobile Association of India v RBI* (2020), illustrates the evolving stance of regulators towards digital assets.<sup>32</sup> While blockchain-based smart contracts offer efficiency in debt restructuring, their enforceability remains legally ambiguous.<sup>33</sup>

**Decentralised Finance (DeFi) and Regulatory Gaps:** The rise of DeFi platforms has disrupted traditional financial systems, raising concerns over investor protection, money laundering, and tax evasion. Unlike conventional banks, DeFi platforms operate without intermediaries, making regulatory oversight difficult. The Financial Action Task Force (FATF) 2021 guidelines call for stronger Know Your Customer (KYC) and Anti-Money Laundering (AML) compliance in DeFi markets. However, enforcement remains challenging, as seen in the Tornado Cash sanctions (2022) imposed by the US Treasury for facilitating illicit transactions.<sup>34</sup> Legal precedents in *SEC v Ripple Labs* and *SEC v Coinbase* demonstrate increasing regulatory scrutiny over crypto-related financial services.<sup>35</sup> The

<sup>28</sup> *US Securities and Exchange Commission v Volkswagen AG et al* [2021] No. 3:2019cv01391 - Document 64 N D Cal [2021]

<sup>29</sup> *Re Mt Gox Co Ltd* [2014] Tokyo District Court Bankruptcy No 2014-1696

<sup>30</sup> Maria Ponnezhath and Tom Wilson, ‘Major crypto lender Celsius files for bankruptcy’ *Reuters* (14 July 2022) <<https://www.reuters.com/technology/crypto-lender-celsius-files-bankruptcy-2022-07-14/>> accessed 10 May 2026

<sup>31</sup> *Legal statement on cryptoassets and smart contracts* (The LawTech Delivery Panel, 2019)

<sup>32</sup> *Internet and Mobile Association of India v Reserve Bank of India* AIR (2021) SC 2720

<sup>33</sup> Aaron Wright and Primavera De Filippi, ‘Decentralized Blockchain Technology and the Rise of Lex Cryptographia’ (2015) SSRN <<https://ssrn.com/abstract=2580664>> accessed 10 May 2026

<sup>34</sup> ‘U.S. Treasury Sanctions Notorious Virtual Currency Mixer Tornado Cash’ (*U S Department of the Treasury*, 08 August 2022) <<https://home.treasury.gov/news/press-releases/jv0916>> accessed 10 May 2026

<sup>35</sup> *SEC v Ripple Labs Inc et al.* [2024] No. 1:2020cv10832 - Document 973 S D N Y

absence of standardised DeFi regulations necessitates urgent global coordination to address emerging risks.

## RECOMMENDATIONS

To create a balanced legal ecosystem that fosters innovation while ensuring accountability, the following recommendations are proposed:

**Harmonising Global Privacy and Cybersecurity Laws:** Governments must collaborate to develop standardised data protection regulations that prevent conflicts arising from jurisdictional inconsistencies. Strengthening cross-border enforcement mechanisms under frameworks like the General Data Protection Regulation (GDPR) and OECD guidelines would enhance corporate compliance and consumer trust.

**Adaptive Labour Regulations for the Platform Economy:** Given the increasing reliance on gig workers, labour laws should evolve to offer protections without stifling digital platform flexibility. Legal frameworks must define employment status criteria, ensure social security benefits and fair working conditions, while accommodating the gig economy's unique structure. Landmark cases like *Uber BV v Aslam* have already set significant precedents in this regard.<sup>36</sup>

**Regulatory Clarity for Digital Assets and Decentralised Finance:** With the rise of cryptocurrencies, NFTs, and DeFi platforms, clear taxation, insolvency, and anti-money laundering (AML) regulations are essential. Governments should establish legally recognised valuation mechanisms for digital assets and incorporate smart contract enforceability within financial regulations. Cases like *Re Mt Gox Co Ltd* illustrate the complexities of handling crypto assets in insolvency proceedings.<sup>37</sup>

**Strengthening ESG Compliance and Corporate Accountability:** Addressing greenwashing risks and mandating transparent Environmental, Social, and Governance (ESG) disclosures can enhance corporate responsibility. Regulatory bodies must impose stricter penalties for misleading sustainability claims while incentivising genuine environmentally sustainable practices.

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<sup>36</sup> *Uber BV & Ors v Aslam & Ors* [2021] UKSC 5

<sup>37</sup> *Re Mt Gox Co Ltd* [2014] Tokyo District Court Bankruptcy No. 2014-1696

**Revising Antitrust Policies to Address Big Tech Dominance:** Competition laws should adapt to the complexities of digital markets by preventing monopolistic practices while allowing fair competition. The enforcement of interoperability mandates and fair-trade policies can prevent market abuse without stifling technological progress. The Digital Markets Act (DMA) in the European Union serves as a model for regulating Big Tech’s anti-competitive behaviour.<sup>38</sup>

Future research should explore the impact of artificial intelligence (AI) on legal frameworks, digital trade agreements, and intellectual property challenges in the evolving tech landscape.<sup>39</sup> By proactively adapting regulations to the fast-changing digital world, policymakers can foster an innovation-friendly yet legally robust environment.

## CONCLUSION

The rapid development of new technologies has presented new challenges and opportunities to the discipline of business law. As digital economies expand, governments and regulatory bodies must contend with urgent issues relating to antitrust enforcement, data privacy, labour rights, corporate accountability, and financial regulation. While existing law frameworks attempt to manage risks related to market power, cybersecurity threats, and financial vulnerability, regulatory enforcement gaps still exist, particularly in cross-border transactions, decentralised finance, and adherence to sustainability standards.

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<sup>38</sup> Digital Markets Act 2022

<sup>39</sup> European Commission, *White Paper on Artificial Intelligence: a European approach to excellence and trust* (White Paper, Cm 65, 2020)